Memo

QC

Quality Control

0.00

NCR:	Yes	/	No

## WORK ORDER NON-CONFORMANCE / UPDATE

147			•
DQA: Sull	Date:	12/10/22	

								QA C	losed:	Date	:		
Work Orde	r: G	099	54	,	DISPOSITION		AGAINST DEPARTMENT/PROCESS						
Part No. <u>D212-664-2017R</u> N NCR No. <u>12-1941</u>					Rework Scrap Use-as-is Work Order Update		Skid-tube Crosstube Machining Small Fab noforming Finishing Large Fab Composite	Re		Water Jet d. Eng. Coor. re/Packaging Supplier	Engineering Quality Other		
Root				Descri	otion of work order update	Initial	Action	Sig	n &				
Cause	Date	Step	Qty	c	or Non-conformance	Chief Eng	Description	D	ate	Verification	QC Inspector		
Doc/Data Equip/Tooling Operator Material Setup Other Process Supplier Training Unapproved	12/19/12	100		Tuke O.	is Appox coz"-0.005" cuser tol over half the ength	12/10/12	CP measures 0.0's to be in tolerance, in assectment with FAI.  Acceptible	12/1	<b>1</b> 1/12	12-10-15	7 (w)		
onapproved [		<u> </u>	i1	··· · ·	F/	AULT CATE	GORY	I		4			
Landir	ng Gear				General		· · · · · · · · · · · · · · · · · · ·	-					
	Bending Centre Not Concentric to O/S Cracks Bend BOM/Route Broken/Damaged				BOM/Route	Inspect	Grain Hardware Inspection Incomplete Instructions Incomplete/Unclear			tolerance ct issing	Pressure/Forced Temperature/Cure Weld Wrong Stock Pulled		
	Cuffs	cimpeu.			Contamination	Mainte	•	<del></del>	Moved				
	Heat Trea				Countersink	Mislabe	eled	<b>⊢</b> ⊸	ioned \				
	Inspection Strip in Tube Cut Too Short				Misread	d	Pow	er Loss,	/Surge	Other			
	Ripples in Bend Drill Holes			Offset									
Torque Waves in Extrusion Drawing				Out of Calibration									
Turning Sequence Finish					Out of Sequence								
Wave/Twist in Tube Folio					Outside	e Dimensions							

# \*90954\*

Page 2

Item ID: Revision ID:	D212-664-2	01TRN	- Service Control of the Control of	Accept	*N900	040	1100	<b>)</b> * s	Setup Sta	rt *N	S1*
Item Name: Start Date: Required Date: Reference:	Crosstube Tur 01/10/2012 16/10/2012	Start Qty: 1.00 Req'd Qty: 1.00	*1* *1*		Cust Item :	ID:			Sto	<sup>p</sup> *N	S2*
Approvals:		in:				ate:		ŀ	Run Sta Sto	I/I	R1* R2*
Sequence ID/ Work Center II 120 *120* Mori Seiki Mori Seiki CNC Lat		2-Blend trar *Use mill ba *Do not use FOLIO REV DWG REV: 3-Remove sa	nd side as per Folio FA sition lines only, **do stard file, brush file re sandpaper coarser thar	not sand whole tube**: peatedly with file card. n 320 grit.	Tool ID	Tool#	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
130 *130* QC Quality Control		QC1- Inspect dimensions  Memo	to dimension sheet	0.00					φ_		gnmil 12/in

mml 12/10/03

DQA:	Date:	

NCR: Yes / No

### WORK ORDER NON-CONFORMANCE / UPDATE

IVCN.	es / NO				WORK ORDER WORK		, VIAITOL / OI I	DATE	QA Closed:	Dat	e:
Work Orde	r:	,			DISPOSITION			AGAINST DE	PARTMENT	/PROCESS	
Part N	·				Rework Scrap Use-as-is	Scrap Machining Small Fab Prod. Eng. Coor. Use-as-is Thermoforming Finishing Rec/Store/Packaging					Engineering Quality Other
NCR N	0				Work Order Update	]	Large Fab	Composite	J	Supplier	
Root				Descri	ption of work order update	Initial	Act	tion	Sign &		
Cause	Date	Step	Qty		or Non-conformance	Chief Eng	Desci	ription	Date	Verification	n QC Inspector
Doc/Data								•			
quip/Tooling											-
Operator											
Material						1					
Setup						ļ.		•			
Other											
Process					,						
Supplier											
Training											
Unapproved									<u> </u>		
					F	AULT CATE	GORY				
Landin	g Gear				General				_		
Ĺ	Bending				Bend	Grain		L.	Ovalized		Pressure/Forced
Ĺ	Centre No	ot Concer	ntric to (	o/s	BOM/Route	Hardw	are		Over/Under	tolerance	Temperature/Cure
	Cracks				Broken/Damaged	Inspec	tion Incomplete		Part Incorre	ct	Weld
	Crushed/	Crimped.			Burrs	Instruc	ctions Incomplete/	Unclear	Part Lost/M	issing	Wrong Stock Pulled
	Cuffs					Maint	enance		Part Moved		
	Heat Trea	at Treat Countersink			Mislab	eled		Positioned \	<b>V</b> rong		
	Inspectio	n Strip in	Tube		Cut Too Short	Misrea	ıd		Power Loss/	'Surge	Other
[	Ripples in	n Bend			Drill Holes	Offset					
	Torque W	Vaves in E	Extrusio	n [	Drawing	Out of	Calibration				
	Turning S	equence		Γ	Finish	Out of	Sequence				
	Wave/Twist in Tube Folio				Outsid	Outside Dimensions					

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

Work Order ID 90954 October-01-12 3:30:26 PM Item ID: D212-664-201TRN Accept \*N900040100\* Setup Start **Revision ID:** Item Name: Crosstube Turning Detail **Start Date:** 01/10/2012 Start Qty: 1.00 **Cust Item ID: Required Date:** 16/10/2012 Reg'd Oty: 1.00 **Customer:** Reference: Run Approvals: Process Plan: \_\_\_\_\_ Date: Tooling: Date: Date: \_\_\_\_ SPC (Y/N): Date: Sequence ID/ Operation Set Up/ Tool ID Tool # Plan Accept Reject Reject Insp. Work Center ID Description **Run Hours** Code Qty Number Stamp **Qty** 140 QC8- Inspect parts - second check 0.00 \*140\* QC 0.00 Memo Quality Control 145 0.00 Rm 12-10-15 \*145\* Crosstubes 0.00 Memo Crosstubes GRIND ONLY TRANSITION LINES SMOOTH LONGITUDE WAY. 150 0.00

\*150\*

HandFXtube

Hand Finishing Crosstubes

Memo

0.00

1- PRESSURE WASH X-TUBE INSIDE AND OUT

2- ACID ETCH X-TUBE INSIDE AND OUT. USE RED SCOTCH BRITE

1 16 1016

											DQA:	Date	
NCR:	Yes	/ No				WORK ORDER NON-O	O	<b>VFORM</b>	MANCE / UPDA				
									100 Table 17 - 17 - 17		QA Closed:	Date	•
Work Ord	or.					DISPOSITION				AGAINST DEF	PARTMENT	PROCESS	
WORK OIG	C1.				<del></del>	Rework	1		Skid-tube C	Crosstube		Water Jet	Engineering
Part No.				<del></del>	Scrap	ſ	Machining	Small Fab Finishing	Prod. Eng. Coor.  Rec/Store/Packaging		Quality		
NCR I	No.	Use-as-is Thermoform  Work Order Update Large			- <del>  </del>	omposite	Nec/3tol	Supplier	- Other				
Root					Descri	ption of work order update	1	Initial	Action		Sign &		
Cause		Date	Step	Qty		or Non-conformance	Ch	nief Eng	Descripti	on	Date	Verification	QC Inspector
Doc/Data					,							i	
Equip/Tooling													
Operator											:		
Material													1
Setup					•								
Other .											'		
Process													
Supplier					į.		İ						
Training							1						
Unapproved													
						<b>F</b>	AUI	LT CATE	GORY			<del></del>	
Landi	ng (	Gear				General	_	-			ı		
		Bending				Bend		Grain			Ovalized		Pressure/Forced
	Centre Not Concentric to O/S				o/s	BOM/Route		Hardwa	re		Over/Under	tolerance	Temperature/Cure
	Cracks Broken/Dama				Broken/Damaged		Inspecti	ion Incomplete		Part Incorre	ct _	Weld	
Crushed/Crimped. Burrs					Instruct	ions Incomplete/Uncl	lear	Part Lost/M	issing	Wrong Ŝtock Pulled			
Cuffs Contamination				Contamination		Mainte	enance		Part Moved				
		Heat Trea	at '			Countersink		Mislabeled			Positioned Wrong		
		<del> </del>				Cut Too Short		Misread			Power Loss/	'Surge	Other

Offset

Out of Calibration
Out of Sequence

Outside Dimensions

Ripples in Bend

Turning Sequence

Wave/Twist in Tube

Torque Waves in Extrusion

Drill Holes

Drawing

Finish Folio October-01-12 3:30:26 PM

Item ID: Revision ID:	D212-664-20			Accept	*N9000	40100	)* Set	up Start	171	S1*
Item Name: Start Date: Required Date: Reference:	Crosstube Tur 01/10/2012 16/10/2012	Start Qty: 1.00 Req'd Qty: 1.00	*1* *1*		Cust Item ID: Customer:			Stop	*N:	S2*
Approvals:	Process Pla	n:	Date:	Tooling:	Date:		Ru		*N	R1*
	QC:		Date:	<b>SPC (Y/N):</b>				Stop	*N!	R2*
Sequence ID/ Work Center II 160 *160* QC Quality Control	D	Operation Description QC5- Inspect part compl	eteness to step on W/O	Set Up/ Run Hours 0.00	Tool ID To	ool # Plan Code		Qty	Reject Number	Insp. Stamp
170 *170* Packaging Packaging		Packaging  Memo Identify and Location:	stock in kanban rack	0.00			12m	12	-10-1	6
180 <b>*180*</b> QC Quality Control		QC21- Final Inspection -	Work Order Release	0.00			}	2)1	0)1	8 \$

pl12-10-17

											DQA:	Date	e:	
NCR:	Yes	/ No				WORK ORDER NON-C	O	NFORM	AANCE / UPDAT		QA Closed:	Date	z.	
	-		<del></del>				_							
Work Orde	er:	٠				DISPOSITION		AGAINST DEPARTMENT/				PROCESS		
Part N	-					Rework Scrap	r	Machining S	rosstube	Water Jet Prod. Eng. Coor.		Ţ Ţ	Ingineering Quality Other	
NCR N	No.					Use-as-is Work Order Update			~ <del></del>	~				
Root					Descri	ption of work order update	ı	nitial	Action		Sign &	·		
Cause	l	Date	Step	Qty	C	or Non-conformance	Ch	ief Eng	Description	on	Date	Verification		QC Inspector
Doc/Data														
Equip/Tooling			:											
Operator														
Material														
Setup														
Other														
Process														
Supplier	$\Box$										i			
Training														
Unapproved	П		1											
						F	AUL	T CATE	GORY					
Landi	ng G	iear				General		_			-	_		
		Bending				Bend		Grain			Ovalized		Pro	essure/Forced
		Centre No	ot Concer	ntric to	o/s	BOM/Route		Hardwa	re		Over/Under	tolerance	Te	mperature/Cure
		Cracks				Broken/Damaged		Inspecti	on Incomplete		Part Incorre	ct [	w	eld
		Crushed/	Crimped.			Burrs		Instruct	ions Incomplete/Uncle	ear 🗌	Part Lost/M	issing	w	rong Stock Pulled
		Cuffs				Contamination		Mainte	enance		Part Moved	_		
		Heat Trea	it			Countersink		Mislabeled			Positioned V	Vrong		
	$\Box$	Inspection	n Strip in	Tube		Cut Too Short		Misread	<del>,</del>		Power Loss/	'Surge	Ot	ther
	П	Ripples in Bend Drill Holes				Drill Holes		Offset			•	_		

Out of Calibration

Out of Sequence

Outside Dimensions

Turning Sequence

Wave/Twist in Tube

Torque Waves in Extrusion

Drawing

Finish

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

### **Picklist Print**

October-01-12 3:30:31 PM

Work Order ID: 90954

D212-664-201TRN

Parent Item Name: Crosstube Turning Detail

\*90954\*

\*D212-664-201TRN\*

Start Date: 01/10/2012

**Required Date:** 16/10/2012

Page 1

Start Qty: 1.00

Required Qty: 1.00

Comments:

Parent Item:

IPP Rev:A 08-03-06 new issue DD verified by:ec IPP Rev B 08.04.02 Removed polish EC verified DD

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D6006-129		Manufactured	No			120	Each	20.0000	I	1			
*D6006 12	)O*								**	_			

ついいいり-179

Crosstube Material

<b>Location</b>	Loc Oty	Loc Code
LG	20	
23970	2	
26550	3	
34690	1	
(69838)	14	

-anm.l 12/10/02

		DQA:	Date:	
ICD: V / N-	MODE ODDED NON CONFORMANCE / LIDDATE			

		, -									QA Closed:	Date	<b>:</b> :		
Work Orde	. r.		•			DISPOSITION				AGAINST DE	PARTMENT,	/PROCESS			
Part N	-					Rework Scrap Use-as-is			Skid-tube Crosstube Machining Small Fab Thermoforming Finishing			Water Jet d. Eng. Coor. re/Packaging	Engineering Quality Other		
NCR No.						Work Order Update	linein	Large Fab	Composite	1100/3101	Supplier				
Root					Descr	iption of work order upda	te	Initial	Ac	ction	Sign &				
Cause		Date	Step	Qty		or Non-conformance	C	nief Eng	Desc	cription	Date	Verification	QC Inspector		
Doc/Data Equip/Tooling															
Operator	$\exists$														
Material							İ								
Setup															
Other															
Process											]				
Supplier							İ	:			ļ	ł			
Training															
Unapproved						· · · · · · · · · · · · · · · · · · ·		•							
						والأراء والمستراء	FAU	LT CATE	GORY						
Landi	ng G	ear				General		-			•	_			
	$\vdash$	Bending			<u> </u>	Bend	, L	Grain			Ovalized		Pressure/Forced		
	-	Centre No	ot Conce	ntric to	o/s	BOM/Route	,  _	Hardwa			Over/Under	<del> -</del>	Temperature/Cure		
	-	Cracks			<u> </u> _	Broken/Damaged	-	-1	ion Incomplete		Part Incorre	<b>├</b> ~	Weld		
	-	Crushed/	Crimped			Burrs	<b> </b>	4	tions Incomplete,	/Unclear	Part Lost/M		Wrong Stock Pulled		
	-	Cuffs			-	Contamination		Mainte			Part Moved				
		Heat Trea			<u> </u>	Countersink	-	Mislabe		-	Positioned \		<del></del> 1		
		Inspection		Tube	<u> </u> _	Cut Too Short	<u> </u>	Misrea	d		Power Loss,	'Surge	Other		
	$\vdash$	Ripples in			_	Drill Holes		Offset							
	Torque Waves in Extrusion Drawing						<u> </u>	Out of Calibration							
	${}\dashv$	Turning S			_	Finish	-		Sequence						
<b>!</b>		Wave/Twist in Tube Folio						Outside	e Dimensions						

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

DART AEROSPACE LTD	Work Order:	90954
Description: Crosstube Assembly (205/212 High Aft)	Part Number:	D212-664-241
Inspection Dwg: D212-664-241 Rev: D		Page 1 of 2

## FIRST ARTICLE INSPECTION CHECKLIST

Inspection Sheet Drawing Dimension		Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
•••	0.200	+/-0.010	,200	. /		vern	CWL-CH
	R0.063	+/-0.010	-063	/		R G	(,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
	2.990	+0.005/-0.000	2-991			vern	cwl-06
	5.237	+/-0.030	5,237			1	
	2.600	+0.005/-0.000	2-602				
_	2.686	+0.005/-0.000	2.686				
EA	2.770	+0.005/-0.000	2,723				
SIDE	2.854	+0.005/-0.000	2.858				
٠,	2.938	+0.005/-0.000	2.941	-	-		
	3.021	+0.005/-0.000	3,023				
	3.133	+0.005/-0.000	3.135				
į	3.179	+0.005/-0.000	3.180	/		U	
	0.200	+/-0.010	-200	_		vern	CWC-06
	R0.063	+/-0.010	-063	/		P(2	CWC-04
	2.990	+0.005/-0.000	2.993			vern	rwc-od
	5.237	+/-0.030	5.237			\	0,0,0
	2.600	+0.005/-0.000	2.603	/			· · · · · · · · · · · · · · · · · · ·
	2.686	+0.005/-0.000	268				
<b>m</b>	2.770	+0.005/-0.000	2-774			``	
SIDE	2.854	+0.005/-0.000	2.85%	/			
S	2.938	+0.005/-0.000	2.942				
	3.021	+0.005/-0.000	3.023				
	3.133	+0.005/-0.000	3:135	/			
	3.179	+0.005/-0.000	3.182				
	124.362	+/-0.020	124.360			tape	L6-22
						•	

Sugar Section

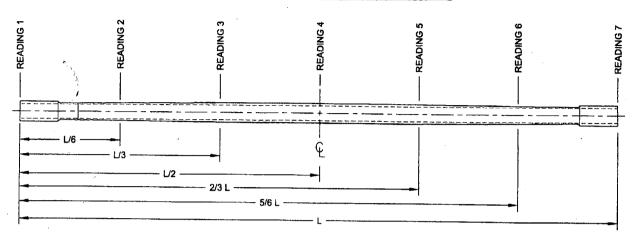
			DQA:	Date:
NCR:	Yes / No	WORK ORDER NON-CONFORMANCE / UPDATE	<del></del>	
			QA Closed:	Date:

IVCIV.		7 110				WORK ORDER NON C			ARTOLY OF D	, (1 L	QA Closed:	Date	2:			
Work Orde	r:					DISPOSITION	,	AGAINST DEPARTMENT/PROCESS								
Part N	o.					Rework Scrap Use-as-is	Scrap Machining Small Fab				4	Water Jet d. Eng. Coor. re/Packaging	Engineering Quality Other			
NCR No.						Work Order Update	Large Fab Composite Supplier									
Root					Descr	iption of work order update	Initia	al	Actio	on	Sign &					
Cause		Date	Step	Qty		or Non-conformance	Chief E	Eng	Descri	ption	Date	Verification	QC Inspector			
oc/Data						***										
quip/Tooling											,,					
perator																
/laterial																
etup							1									
Other																
rocess																
upplier																
raining																
Inapproved							<u></u>				<u> </u>	<u> </u>				
							AULT CA	ATEG	ORY		<del> </del>					
Landir		3			_	General	<b>—</b> .		/		1	Г	—¬₋ ,_ İ			
		Bending			<u> </u>	Bend	Gra		, .	<u> </u>	Ovalized		Pressure/Forced			
		Centre No	ot Concer	ntric to (	o/s	BOM/Route	$\blacksquare$	rdwar		-	Over/Under	<b>-</b>	Temperature/Cure			
		Cracks				Broken/Damaged	$\mathbf{H}$		on Incomplete	-	Part Incorre	- <del>-</del>	Weld			
		Crushed/0	Crimped.			Burrs	<del></del>		ons Incomplete/U	nclear	Part Lost/M		Wrong Stock Pulled			
	_	Cuffs			_	Contamination	$\vdash$		nance		Part Moved					
		Heat Trea				Countersink	_	slabele	ed .a.z.:	- <u> </u>	Positioned \		¬ ·			
ļ		Inspection	•	Tube		Cut Too Short		sread			Power Loss,	/Surge	Other			
		Ripples in			_	Drill Holes	<b></b>	set	variation of the state of the							
	e un	Torque W		xtrusio	n	Drawing	-		alibration							
	-	Turning So			· L	Finish	-	, A	equence							
		Wave/Tw	ist in Tub	96		Folio	Out	tside 1	Dimensions							

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

DART AEROSPACE LTD	Work Order:	90954
Description: Crosstube Assembly (205/212 High Aft)	Part Number:	D212-664-241
Inspection Dwg: D212-664-241 Rev: D		Page 2 of 2

## WALL THICKNESS MEASUREMENT



	WALL	THICKNESS	MEASUREME	NT (IN)	Deviation	
Location	w1	w2	w3	w4	Δw (max-min)	TOLERANCE
READING 1 L= 0"	.397	.391	.374	.374	.023	
READING 2 L= 15	.269	.273	252	.246	.027	
READING 3 L= 50	. 385	. 389	. 379	374	.015	and the second
READING 4	.514	.514	522	515	.008	0.062"
READING 5 L= 30	,383	. 363	.377	. 378	.006	
READING 6 L= 15	. 266	.262	. 251	.256	.015	
READING 7	. 390	.,391	.377	-381	0/4	

### Calibration Result

Actual Block Thickness: Sod - 600

Sitescan 250 Measured Thickness: <u>\[ \infty \] \[ \infty \] \[ \infty \] \[ \infty \]</u>

Measured by:	Audited by:	2000	Preliminary Approval:	
Date: 12/10/03	Date: /2	-10-15	Date:	

Rev	Date	Change	Revised by Approve
Α	05.04.27	New Issue (P/O D412-664-201)	KJ/JLM
В	06.03.09	Tolerance for 5.237 was +/-0.001	KJ/JLM
С	07.05.08	Dwg Rev. updated	KJ/JLM
D	10.08.03	Dimension 124.362 was 124.36	KJ /O /A
E	12.06.04	Wall thickness form added	KJ A

												DQA:	Da	te: _	
NCR:	Yes	cN \				WORK ORDER NON-	NFORM		_						
											Q	A Closed:	Da	te:	
Work Ord	or.					DISPOSITION				AGAINST DI	ARTMENT/	PROCESS			
Part I						Rework Scrap Use-as-is	Skid-tube Crosstube Small Fab Thermoforming Finishing			Water Je Prod. Eng. Coor Rec/Store/Packaging				Engineering Quality Other	
NCR I	NCR No.					Work Order Update			Large Fab	Composite			Supplier	-	
Root					Descri	ption of work order update	Ī	nitial	Α	ction		Sign &			
Cause		Date	Step	Qty	(	or Non-conformance	Ch	ief Eng	Des	cription		Date	Verificatio	n	QC Inspector
Doc/Data															
Equip/Tooling													ı		
Operator									:						
Material			1												
Setup															
Other															
Process															
Supplier			f									,			
Training															
Unapproved															
						<u> </u>	AUI	T CATE	GORY						
Landi	ng (	Gear				General		-	•	<b></b>	_			_	1
	L	Bending			<u>.                                    </u>	Bend	L	Grain			_ c	Ovalized		L	Pressure/Forced
		Centre N	ot Conce	ntric to	o/s	BOM/Route		Hardwa	ire		_]c	Over/Under	tolerance	_	Temperature/Cure
		Cracks				Broken/Damaged		Inspect	ion Incomplete		P	art Incorre	ct	L	Weld
		Crushed/	Crimped.			Burrs		Instruct	tions Incomplete	/Unclear	P	art Lost/Mi	ssing .	L	Wrong Stock Pulled
l		Cuffs				Contamination		Maintenance			P	art Moved			
1		Heat Trea	at			Countersink		Mislabe	eled		P	ositioned V	Vrong		-
		Inspection Strip in Tube Cut Too Short						Misread	Misread				Surge	L	Other

Offset

Out of Calibration

Out of Sequence

Outside Dimensions

Ripples in Bend

Turning Sequence

Wave/Twist in Tube

Torque Waves in Extrusion

Drill Holes

Drawing

Finish

Item	Qty -241	Qty -241B	Part Number	Description
1	Х		D212-664-241	CROSSTUBE ASSEMBLY (205/212 HIGH AFT)
2		Х	D212-664-241B	CROSSTUBE ASSEMBLY (214 HIGH AFT)
3	1	1	D6006-129	CROSSTUBE
4	2	2	D2940-1	SUPPORT
5	4	4	D3595-063-530	RUBBER CUSHION
6	4	4	MS21920-28	CLAMP (OR MS21920-30)
7	A/R	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)

#### GENERAL NOTES:

1) MATERIAL: MANUFACTURED FROM D6006-129 FINISHED LENGTH = 124.362±0.020

2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1 PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2 PAINT OUTSIDE PER DART QSI 005 4.2

TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.

UNITS: INCHES UNLESS OTHERWISE NOTED.

BREAK SHARP EDGES: 0.005 TO 0.010 MAX.

IDENTIFICATION: SCRIBE DART PART NUMBER "D212-664-XXX" AND BATCH NUMBER ON INSIDE OF CUFF USING VIBRATING STYLUS

WEIGHT: D212-664-241 = 44.2 lbs (PER IIN-D212-664) D212-664-241B = 44.2 lbs (PER IIN-D212-664)

PART IS SYMMETRIC ABOUT CENTERLINE.

RUN CUTTER OFF PART. BLEND OUT EDGE LONGITUDINALY, TRANSITION SHOULD BE SMOOTH

10) BEND PROGRESSIVELY WITH A MINIMUM OF 5 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.

11) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.

12) INSTALL D2940-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 TO THE SURFACE OF D2940-1 THAT WILL BE IN CONTACT WITH THE CROSSTUBE PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.

13) INSTALL MS21920-28 CLAMPS (OR -30) WITH D3595-063-530 RUBBER CUSHIONS TO SECURE THE D2940-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE OPPOSITE OF CROSSTUBE

14) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.

15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

SHOP COPY RETURN TO ENGINEERING UNCONTROLLED COPY SUBJECT TO AMENDMENT WITHOUT NOTICE WORK ORDER MLJ 12-10-01

60 # 11-614 11.09.26

DEO ATTACHED

REFORMAT/REVISE GENERAL NOTES/PART LIST: 09 09 30 REORGANIZED VIEWS AND REFORMATTED DRAWING TO CURRENT STANDARDS; ADD -241B (ZN D4-2, 84-2); REMOVED REF & ADD TOLERANCES (ZN D8-3 & C4-3, C6-3 & A8-3); RELOCATED FLAG #6 PER PAR 08-046 (ZN A5-3); MOVED TURNING DETAIL & UPDATED TOLERANCE REMOVE -1009 ABRASION STRIP; ADD MAGNOBOND 07.03.08 6398, CUSHION, REVERSE CLAMPS ADD HOLES FOR COMPATABILITY WITH BHT/AA SKIDTUBES 05.02.04 NEW ISSUE 00.12.12 REV. DESCRIPTION BY DATE DESIGN DART AEROSPACE LTD DRAWN RF HAWKESBURY, ONTARIO, CANADA CHECKED DRAWING NO. MFG. APPR. D212-664-241 SHEET 1 OF 4 APPROVED TITLE DE APPR. CROSSTUBE ASSY (205/212 HI AFT) DATE COPYRIGHT © 2000 BY DART AEROSPACE LTD 09.09.30

D

										DQA	: Date	:
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									·	QA Closed	: Date	:
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Misread

Out of Calibration
Out of Sequence

Outside Dimensions

Offset

Other

Power Loss/Surge

Turning Sequence

Wave/Twist in Tube

Ripples in Bend

Inspection Strip in Tube

Torque Waves in Extrusion

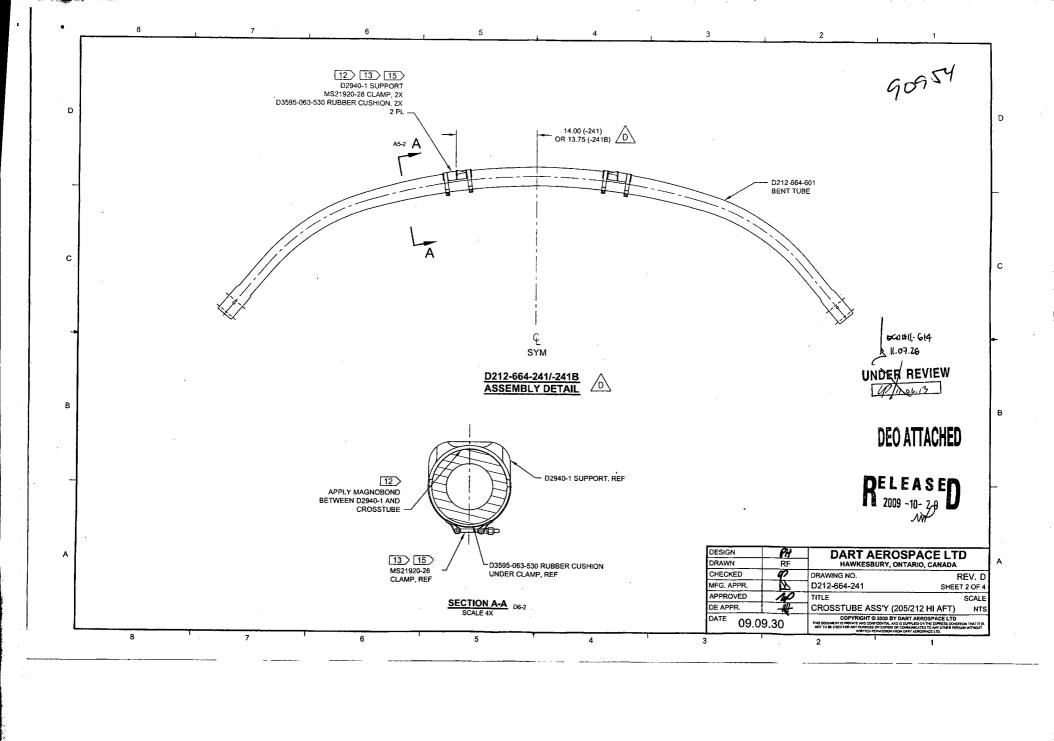
Cut Too Short

Drill Holes

Drawing

Finish

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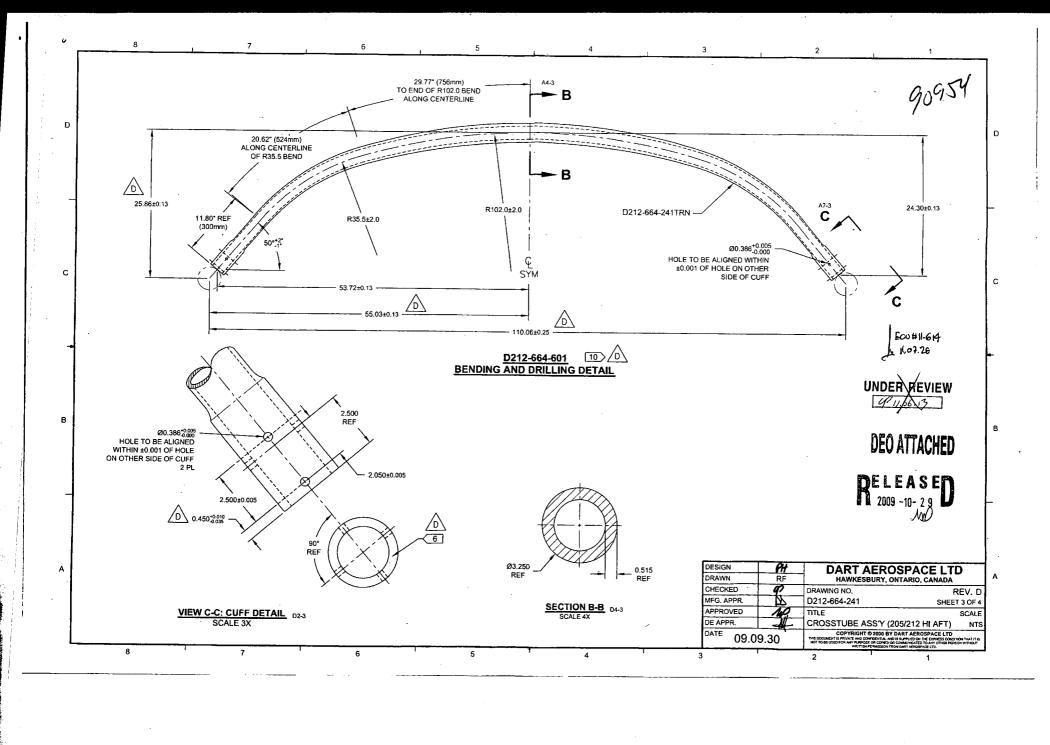


NCR: Yes / N
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		Inspection	n Strip in	Tube		Cut Too S	hort		Misread	Ė		Power Loss,	/Surge	Other
		Ripples in	Bend			Drill Hol	es		Offset					
	Torque Waves in Extrusion Drawing						Out of (	Calibration						
		Turning S	equence		Γ	Finish			Out of 9	Sequence				
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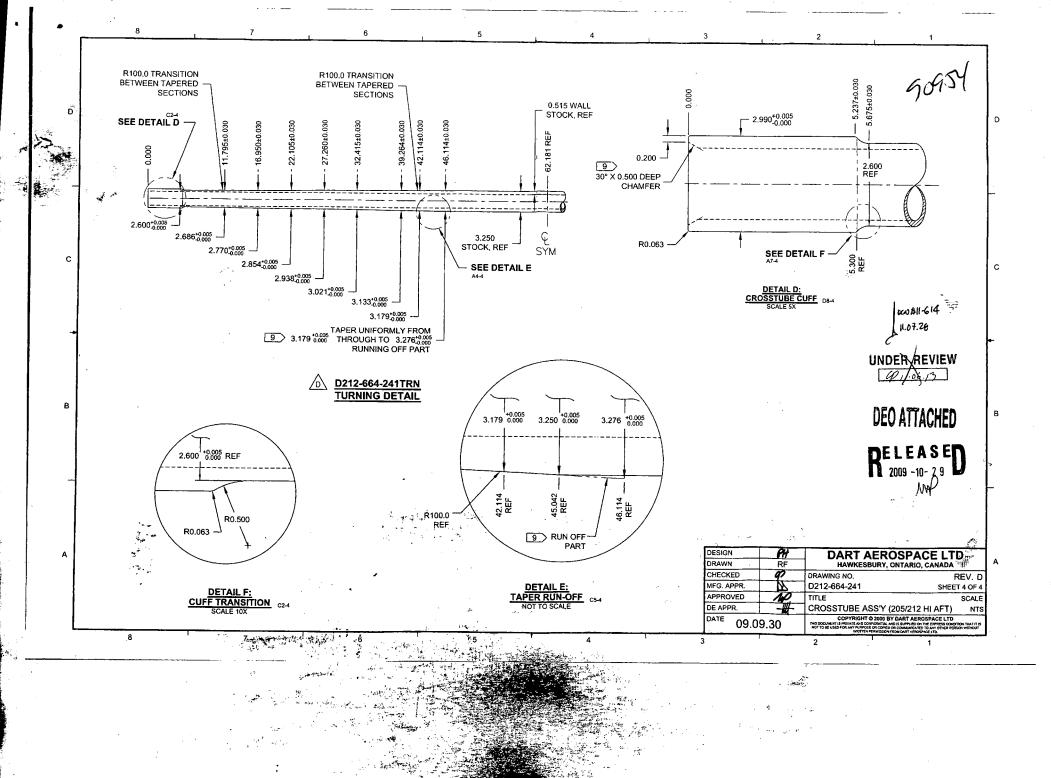


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Out of Calibration

Out of Sequence

Outside Dimensions

Date:

DQA:

Turning Sequence

Wave/Twist in Tube

Torque Waves in Extrusion

Drawing

Finish

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90954

DRAWING NO.	TITLE	REV. D	DART AEROSPACE L	TD D.E.O. NO.	SHEET NO.	SCALE
D212-664-241	CROSSTUBE ASSY (205/2	12 HI AFT)	ENGINEERING ORDI		SHEET 1 OF,2	NTS
DRAWN K	CHECKED	1/1	MFG. APPR.	APPROVED MP	DE APPR.	
DATE 11.04	.07 DATE	11.09.11	DATE /1.04,12	DATE 11/04/12	DATE 11-04.12	

PURPOSE:

ADD AN INSPECTION WINDOW TO UNDERSIDE OF CROSSTUBE.

CHANGE:

NOTES 2 OF SHEET 1 IS AMENDED AS FOLLOWS:

IS:

2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1

PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
MASK UNDERSIDE OF CROSSTUBE AS SHOWN (HATCHED AREA) AND

PAINT OUTSIDE PER DART QSI 005 4.2 REMOVE MASKING AND APPLY CLEAR COAT

WAS:

2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1

PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2

PAINT OUTSIDE PER DART QSI 005 4.2

1 2011 -04- 18 P

UNDER REVIEW

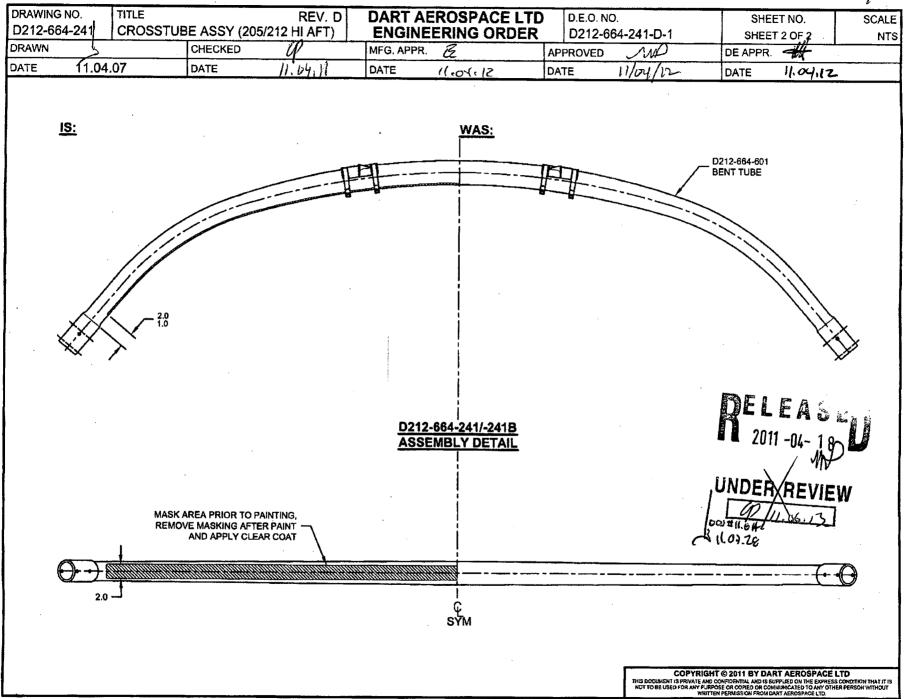
BCV41-614

2, 11.07.28

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				DQA:	Date:	
NCR:	Yes /	No	WORK ORDER NON-CONFORMANCE / UPI	DATE		

		,									QA Closed:	Date	e:
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	_					Rework			Skid-tube	Crosstube		Water Jet	Engineering
Part N	اo. <mark>–</mark>					Scrap	1 1		Machining	Small Fab	4	d. Eng. Coor. e/Packaging	Quality Other
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		Cuffs				Contamination		Mainte	enance		Part Moved		•
		Heat Trea	t			Countersink		Mislabe	eled		Positioned \	<b>V</b> rong	
		Inspection	n Strip in	Tube		Cut Too Short		Misread	d		Power Loss/	Surge	Other
		Ripples in	Bend			Drill Holes		Offset					
		Torque W	aves in E	xtrusio	n 🗌	Drawing		Out of (	Calibration				
		Turning S	equence			Finish		Out of 9	Sequence				
		Wave/Tw	ist in Tul	oe .		Folio	$\Box$	Outside	Dimensions				



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	$\vdash$	Ripples in	-	TUDE	-	_	Drill Holes	-	Offset	-	L	٦, ٥٥, ١٥٥٥/		10	
	-	1		Extrusion	-	_	Drawing	$\vdash$	4	Calibration					
						Finish		1	Sequence			· · ·			

Outside Dimensions

Wave/Twist in Tube

90954

DRAWING NO.	TITLE	REV. D DA	RT AEROSPACE LTI	D.E.O. NO.	SHEET NO.	SCALE
D212-664-241	CROSSTUBE ASS'Y (205/2		IGINEERING ORDER		SHEET 1 OF 1	NTS
DRAWN 4	CHECKED A	T	APPR.	APPROVED (A)	DE APPR.	NIS
DATE 11.07	.15 DATE 11.0	7. 20 DATE	E 1107.21	DATE 11/27/21	DATE 11-07.21	

PURPOSE:

REPLACE MAGNOBOND WITH PROSEAL.

### **CHANGE:**

IS:

item	Qty -241	Qty -241B	Part Number	Description
7	A/R	A/R	PROSEAL 890 B-2	SEALANT, AMS-S-8802 CLASS B-2

#### WAS:

7	A/R	A/R	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100,
			TYPE II, CLASS 2 ADHESIVE)

NOTE 12 & 15, SHEET 1 IS AMENDED AS FOLLOWS:

IS:

- 12) TO INSTALL D2940-1 SUPPORT: ABRADE MATING SURFACE OF SUPPORT AND CROSSTUBE WITH 180-GRIT SANDPAPER AND REMOVE RESIDUE WITH MEK (OR EQUIVALENT). APPLY A 0.04" TO 0.07" THICK LAYER OF PROSEAL 890 CLASS B-2 (OR AMS-S-8802 CLASS B-2) SEALANT TO MATING SURFACE OF SUPPORT.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING. PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER PROSEAL 890 SEALANT HAS CURED FOR 72 HOURS.

#### WAS:

- 12) INSTALL D2940-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 TO THE SURFACE OF D2940-1 THAT WILL BE IN CONTACT WITH THE CROSSTUBE PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.



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E USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT

NCR:	Yes /	/ No
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## WORK ORDER NON-CONFORMANCE / UPDATE

DQA:\_

Date: \_\_\_\_\_

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Work Order:						DISPOSITION		AGAINST DEPARTMENT/PROCESS					
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rait 140.						Use-as-is	- 1	Thermoforming Thermoforming		Rec/Store/Packaging		Other	
NCR No.						Work Order Update		Large Fab	Composite		Supplier		
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Equip/Tooling												·	
Operator	Ш	1						*			:		
Material	Ш										-		
Setup								, "			• .		
Other	Ш					No and							
Process									· . •				
Supplier									<u>.</u>	. ,		·	
Training											]. [		
Unapproved											<u> </u>		
FAULT CATEGORY													
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Bending					_	Bend		Grain		Ovalized		Pressure/Forced	
	Centre Not Concentric to O/S					BOM/Route	Harc	Hardware		Over/Under	tolerance	Temperature/Cure	
	Crac					Broken/Damaged	$\blacksquare$	Inspection Incomplete		Part Incorrect		Weld	
		ned/Cri	mped.			Burrs	Instr	Instructions Incomplete/Unclear		Part Lost/Missing		Wrong Stock Pulled	
	~∛ Cùffs	Cùffs				Contamination	Mai	Maintenance[		Part Moved			
•	—	Treat				Countersink	Misl	Mislabeled		Positioned V	Vrong	<u>.                                     </u>	
:			itrip in	Tube	<u> </u>	Cut Too Short	Misr	ead		Power Loss/	Surge	Other	
	Ripples in Bend					Drill Holes	Offs	et					
,				xtrusion	<u> </u>	Drawing	Out	Out of Calibration					
	Turning Sequence					Finish	Out	Out of Sequence					
	Wave/Twist in Tube					Folio	Outs	Outside Dimensions					

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